

**Abstract**

The invention provides methods for integrating a heterologous polynucleotide into the genome of an avian cell. The methods deliver to an avian cell a 5 polynucleotide and a source of integrase activity that mediates recombination between the polynucleotide and the genomic DNA of the avian cell. The invention provides modified avian or artificial chromosomes as vectors to shuttle transgenes or gene clusters into an avian genome. Another aspect of the invention are avian cells genetically modified with a transgene vector. One cell line for the delivery and 10 integration of a transgene comprises a heterologous attP site and, optionally, a region for expressing the integrase. Methods are also included for the production of a heterologous polypeptide by transgenic avian tissue involve integrating a heterologous polynucleotide into the avian genome. Subsequently, a mature transgenic avian is derived by transferring the transgenic blastodermal cells to an embryo and allowing 15 that embryo to develop fully.